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1 : *Immunology* 1993 Jan;78(1):65-73

Related Articles, Books,

Characterization of T-cell responses to the house dust mite aller Der p II in mice. Evidence for major and cryptic epitopes.

Hoyne GF, Callow MG, Kuo MC, Thomas WR

Western Australian Research Institute for Child Health, Princess Margaret Hospital for Children, Perth.

Major histocompatibility complex (MHC) congenic strains can be defined as high and low responders to the major house dust mite allergen Der p II on the basis of the ability to sensitize T cells for in vitro lymphokine release. Mice of the H-2b haplotype were high responders, H-2k were intermediate and H-2d low responders. Like responses to other proteins, only a limited number of epitopes could be located by the response of T cells from mice immunized with the allergen to a series of overlapping peptides. The epitopes for H-2b mice were 11-35, 78 and 105-129, 36-50 and 78-104 for H-2k mice and 36-60 for H-2d. Immunization with the peptides however revealed that spleen-adherent cells were required for lymph node cells to recall responses to the whole protein and in addition that cells could be sensitized by cryptic epitopes defined by peptides 22-50 and 1-20 for H-2b mice. Peptides containing these cryptic epitopes did not normally induce responses in mice primed with the allergen, but when they were used for immunizing they could prime mice for responses to the peptide and the whole allergen. The results both help to define a model for studying the presentation of allergens and have significant implications for peptide-based immunotherapy.

PMID: 7679663, UI: 93170864

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BLAST PubMed Nucleotide Protein Genome Structure PopSet Taxonomy Help
Sequence 79 from patent US 5776761

Views:

Accession: AR016640

Total Bases Sequenced: 1368 bp
Completed: Dec 5, 1998.

GenBank view

US PATENT: 5776761

FASTA view

1

ASN.1 view

Legend.

|||||| - 100-200-...

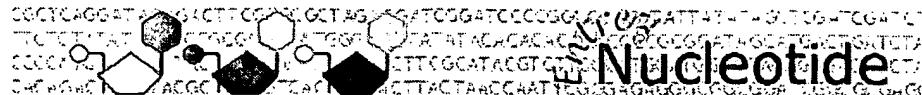
Unknown. Unclassified.

Nucleic acids encoding allergenic proteins from ragweed

Rogers, B., Klapper, D.G., Rafnar, T. and Kuo, M.

Patent: US 5776761-A 79 07-JUL-1998;

Comments and suggestions to: info@ncbi.nlm.nih.gov



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1 : AR016640 . Sequence 79 from p...[gi:3972917]

Related Sequences

LOCUS AR016640 1368 bp DNA PAT 05-DEC-1998
 DEFINITION Sequence 79 from patent US 5776761.
 ACCESSION AR016640
 VERSION AR016640.1 GI:3972917
 KEYWORDS .
 SOURCE Unknown.
 ORGANISM Unknown.
 Unclassified.
 REFERENCE 1 (bases 1 to 1368)
 AUTHORS Rogers,B., Klapper,D.G., Rafnar,T. and Kuo,M.
 TITLE Nucleic acids encoding allergenic proteins from ragweed
 JOURNAL Patent: US 5776761-A 79 07-JUL-1998;
 FEATURES Location/Qualifiers
 source 1..1368
 /organism="unknown"
 BASE COUNT 397 a 286 c 327 g 358 t
 ORIGIN

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1261 gtctgaattt tgatttttt tgattctcag tttcataata tggcttctt agagcaaaat
1321 tagagaagag tgtctttgtt caactacatt ttatggttt tatattaa
  //
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BLAST PubMed Nucleotide Protein Genome Structure PopSet Taxonomy Help

major fecal allergen Der p I - house-dust mite (*Dermatophagoides pteronyssinus*) (fragments)

Views:

GenBank view

CDS with gene
and mRNA

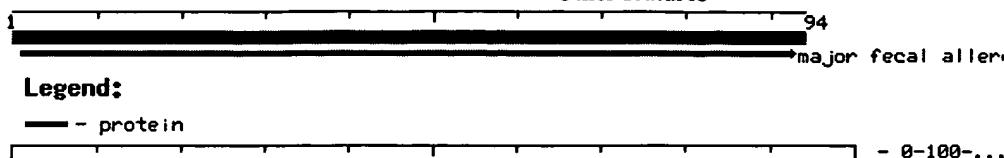
FASTA view

gene, tRNA,
promoter...

ASN.1 view

Other features

Feature table



Organism: *Dermatophagoides pteronyssinus*

Genetic Code: 1

Lineage: Eukaryota; Metazoa; Arthropoda; Chelicerata; Arachnida; Acari; Acariformes; Sarcoptiformes; Astigmata; Analgoidea; Pyroglyphidae; Dermatophagoides.

Structural studies on the allergen Der p1 from the house dust mite *Dermatophagoides pteronyssinus*: similarity with cysteine proteinases

Simpson,R.J., Nice,E.C., Moritz,R.L. and Stewart,G.A.

Protein Seq. Data Anal. 2 (1), 17-21 (1989)

89098855

Comments and suggestions to: [\[info@ncbi.nlm.nih.gov\]](mailto:info@ncbi.nlm.nih.gov)

NCBI Protein

PubMed Nucleotide Protein Genome Structure PopSet

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1 : S03380 . major fecal allerg...[gi:1078971]

PubMed, Related Sequences

LOCUS S03380 94 aa INV 01-SEP-1995
 DEFINITION major fecal allergen Der p I - house-dust mite (Dermatophagoides pteronyssinus) (fragments).
 ACCESSION S03380
 PID g1078971
 VERSION S03380 GI:1078971
 DBSOURCE pir: locus S03380;
 summary: #length 94 #checksum 3067;
 PIR dates: 05-Mar-1995 #sequence_revision 01-Sep-1995 #text_change 01-Sep-1995;
 punctuation in sequence.
 KEYWORDS .
 SOURCE Dermatophagoides pteronyssinus.
 ORGANISM Dermatophagoides pteronyssinus
 Eukaryota; Metazoa; Arthropoda; Chelicerata; Arachnida; Acari; Acariformes; Sarcoptiformes; Astigmata; Analgoidea; Pyroglyphidae; Dermatophagoides.
 REFERENCE 1 (residues 1 to 94)
 AUTHORS Simpson, R.J., Nice, E.C., Moritz, R.L. and Stewart, G.A.
 TITLE Structural studies on the allergen Der p1 from the house dust mite Dermatophagoides pteronyssinus: similarity with cysteine proteinases
 JOURNAL Protein Seq. Data Anal. 2 (1), 17-21 (1989)
 MEDLINE 89098855
 FEATURES Location/Qualifiers
 source 1..94
 /organism="Dermatophagoides pteronyssinus"
 /db_xref="taxon:6956"
 Protein 1..94
 /product="major fecal allergen Der p I"
 /note="allergen Der p1"
 ORIGIN
 1 tnacsingna paeidlrrqmr tvtpirmqmq ggcgsxxafs gvagieyiqh ngvvqesyyr
 61 fgisnycqiy ppnankdngy qpnnyxavniv gyxn
 //

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Dermatophagoides farinae mRNA for mite allergen Der f II precursor, partial cds, clone:pFL11

Views:

GenBank view

Accession: [D10449](#)

CDS with gene
and mRNA

FASTA view

Total Bases Sequenced: 485 bp
Completed: Apr 28, 1993.

gene, tRNA,
promoter...

ASN.1 view

Other features

Coding Regions

485
mite allergen Der f II pre
polyA_signal

Feature table

Legend:

— CDS — other feature
100-200...

Organism: Dermatophagoides farinae

Genetic Code: 1

Lineage: Eukaryota; Metazoa; Arthropoda; Chelicerata; Arachnida; Acari; Acariformes; Sarcoptiformes; Astigmata; Analgoidea; Pyroglyphidae; Dermatophagoides.

Cloning and expression of cDNA coding for the major house dust mite allergen Der f II in Escherichia coli

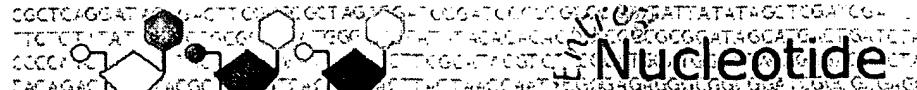
Yuuki,T., Okumura,Y., Ando,T., Yamakawa,H., Suko,M., Haida,M. and Okudaira,H.
Agric. Biol. Chem. 55 (5), 1233-1238 (1991)
[91291341](#)

Direct Submission

Yuuki,T.

Submitted (31-JAN-1992) to the DDBJ/EMBL/GenBank databases. Toshifumi Yuuki, Asahi Breweries, Ltd., Central Research Laboratories; 2-13-1, Ohmori-ku, Ohta-ku, Tokyo 143, Japan (Tel:03-5493-3255, Fax:03-5493-7027)

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1 : D10449 . Dermatophagoides f...[gi:217307]

PubMed, Protein, Related Sequences

LOCUS DEPDER3 485 bp mRNA INV 01-FEB-2000
DEFINITION Dermatophagoides farinae mRNA for mite allergen Der f II precursor partial cds, clone:pFL11.
ACCESSION D10449
VERSION D10449.1 GI:217307
KEYWORDS Der II major allergen group; Der f II; mite allergen.
SOURCE Dermatophagoides farinae cDNA to mRNA, clone:pFL11.
ORGANISM Dermatophagoides farinae
 Eukaryota; Metazoa; Arthropoda; Chelicerata; Arachnida; Acari; Acariformes; Sarcoptiformes; Astigmata; Analgoidea; Pyroglyphidae; Dermatophagoides.
REFERENCE 1 (bases 1 to 485)
AUTHORS Yuuki,T., Okumura,Y., Ando,T., Yamakawa,H., Suko,M., Haida,M. and Okudaira,H.
TITLE Cloning and expression of cDNA coding for the major house dust mit allergen Der f II in *Escherichia coli*
JOURNAL Agric. Biol. Chem. 55 (5), 1233-1238 (1991)
MEDLINE 91291341
REFERENCE 2 (bases 1 to 485)
AUTHORS Yuuki,T.
TITLE Direct Submission
JOURNAL Submitted (31-JAN-1992) to the DDBJ/EMBL/GenBank databases.
 Toshifumi Yuuki, Asahi Breweries, Ltd., Central Research Laboratories; 2-13-1, Ohmori-kita, Ohta-ku, Tokyo 143, Japan
 (Tel:03-5493-3255, Fax:03-5493-7027)
FEATURES Location/Qualifiers
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 /db_xref="taxon:6954"
 /clone="pFL11"
CDS <1..419
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mat_peptide 30..416
 /evidence=experimental
 /product="Der f II"
polyA_signal 467..472
polyA_site 485
BASE COUNT 166 a 94 c 87 g 138 t
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 121 gtggtaaacc attcactttg gaagccttat tcgatgccaa cccaaacact aaaaccgcta

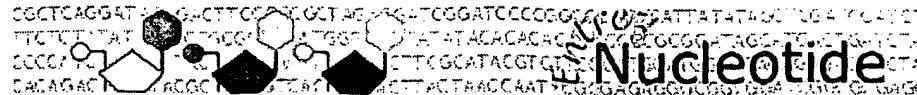
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421 aaaaaaaaaat aaatatgaaa atttcacca acatcgaaaca aaattcaata accaaaaattt
481 gaatc

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1 : X15266 . Human gene for mus...[gi:32323]

PubMed, Protein, Related Sequences, LinkOut

LOCUS HSHM4 1913 bp DNA **PRI** 14-JAN-2000
DEFINITION Human gene for muscarinic acetylcholine receptor HM4.
ACCESSION X15266 X13530
VERSION X15266.1 GI:32323
KEYWORDS muscarinic acetylcholine receptor.
SOURCE human.
ORGANISM Homo sapiens
Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Mammalia;
Eutheria; Primates; Catarrhini; Hominidae; Homo.
REFERENCE 1 (bases 1 to 1913)
AUTHORS Peralta,E.G., Ashkenazi,A., Winslow,J.W., Smith,D.H.,
Ramachandran,J. and Capon,D.J.
TITLE Distinct primary structures, ligand-binding properties and
tissue-specific expression of four human muscarinic acetylcholine
receptors
JOURNAL EMBO J. 6 (13), 3923-3929 (1987)
MEDLINE 88166632
COMMENT See X15263-15266 for other human muscarinic acetylcholine receptor
genes.
FEATURES
source Location/Qualifiers
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/organism="Homo sapiens"
/db_xref="taxon:9606"
/clone_lib="human genomic library"
101..1873
/note="HM4 muscarinic receptor (AA 1-590)"
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1201 cgtgctcaag cttccgggtc acagcaccat cctcaactcc accaagttac cctcatcgga
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1861 gcaggccttg tagaatgagg ttgtatcaat agcagtgaca aaacgacaca tca

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collagen alpha 3(IV) chain precursor, long splice form - human

Views:

GenBank view

Total Residues Sequenced: 1670 aa
Completed: Oct 28 1994

CDS with gene
and mRNA
gene, tRNA,
promoter...

Refresh

FASTA view

ASN 1 view

Legend:

— protein — region — other feature
— 1000-2000 —

Organism: *Homo sapiens*

Organism: Homo
Genetic Code: 1

Lineage: Eukarya; Metazoa; Chordata; Craniata; Vertebrata; Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Homo.

Sequence and localization of a partial cDNA encoding the human alpha 3 chain of type IV collagen

Morrison,K.E., Mariyama,M., Yang-Feng,T.L. and Reeders,S.T.
Am. J. Hum. Genet. 49 (3), 545-554 (1991)
91353570

Molecular cloning of the human Goodpasture antigen demonstrates it to be the alpha 3 chain of type IV collagen

Turner, N., Mason, P.J., Brown, R., Fox, M., Povey, S., Rees, A. and Pusey, C.D.
J. Clin. Invest. 89 (2), 592-601 (1992)
92147878

Exon/intron structure of the human alpha 3(IV) gene encompassing the Goodpasture antigen (alpha 3(IV)NC1). Identification of a potentially antigenic region at the triple helix/NC1 domain junction

Quinones,S., Bernal,D., Garcia-Sogo,M., Elena,S.F. and Saus,J.
J. Biol. Chem. 267 (28), 19780-19784 (1992)
93015826

The human mRNA encoding the Goodpasture antigen is alternatively spliced

Bernal,D., Quinones,S. and Saus,J.
J. Biol. Chem. 268 (16), 12090-12094 (1993)
93280184

Exon/intron structure of the human alpha 3(IV) gene encompassing the Goodpasture antigen (alpha 3(IV)NC1). Identification of a potentially antigenic region at the triple helix/NC1 domain junction

Quinones,S., Bernal,D., Garcia-Sogo,M., Elena,S.F. and Saus,J.
J. Biol. Chem. 269 (25), 17358 (1994)
94274734

Complete primary structure of the human alpha 3(IV) collagen chain. Coexpression of the alpha 3(IV) and alpha 4(IV) collagen chains in human tissues
Mariyama,M., Leinonen,A., Mochizuki,T., Tryggvason,K. and Reeders,S.T.
J. Biol. Chem. 269 (37), 23013-23017 (1994)
94364994

COMMENT Prolines and lysines at the third position of the tripeptide repeating unit (G-X-Y) are hydroxylated to varying extents. Prolines are predominately 4-hydroxylated. Lysines are 5-hydroxylated and subsequently O-glycosylated. In Goodpasture's syndrome, an autoimmune response develops against an epitope in the carboxyl-terminal nonhelical NC1 domain. This minor type IV collagen is thought to form a heterotrimer of two alpha 3(IV) chains and one alpha 4(IV) chain (see PIR:CGHU1B). A polymeric network forms with tetrameric associations among trimer amino-terminal domains (with disulfide and desmosine cross-links), dimeric associations among trimer carboxyl-terminal domains (with disulfide bonds), and both intra-trimer and inter-trimer associations in the interrupted helical domain (with disulfide and desmosine cross-links).

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1 : CGHU3B . collagen alpha 3(I...[gi:1360672]

PubMed, Related Sequences

LOCUS CGHU3B 1670 aa **PRI** 22-JUN-1999
DEFINITION collagen alpha 3(IV) chain precursor, long splice form - human.
ACCESSION CGHU3B
PID g1360672
VERSION CGHU3B GI:1360672
DBSOURCE pir: locus CGHU3B;
summary: #length 1670 #molecular-weight 161725 #checksum 818;
genetic: #gene GDB:COL4A3 ##cross-references GDB:128351;
OMIM:120070 #map_position 2q36-2q37 #introns 1385/1; 1418/1;
1488/1; 1547/2; 1585/3; 1643/2 #note the alpha 3(IV) and alpha
4(IV) chain genes are encoded on opposite strands with overlapping
promotor regions; defects in this gene can result in recessive for
Alport's syndrome #status incomplete;
superfamily: collagen alpha 1(IV) chain;
PIR dates: 28-Oct-1994 #sequence_revision 03-Oct-1995 #text_change
22-Jun-1999.
KEYWORDS alternative splicing; basement membrane; cell binding; coiled coil
extracellular matrix; glycoprotein; hydroxylysine; hydroxyproline;
trimer; triple helix.
SOURCE
ORGANISM Homo sapiens
Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Mammalia;
Eutheria; Primates; Catarrhini; Hominidae; Homo.
1 (residues 1 to 1670)
REFERENCE
AUTHORS Morrison, K.E., Mariyama, M., Yang-Feng, T.L. and Reeders, S.T.
TITLE Sequence and localization of a partial cDNA encoding the human
alpha 3 chain of type IV collagen
JOURNAL Am. J. Hum. Genet. 49 (3), 545-554 (1991)
MEDLINE 91353570
REFERENCE
AUTHORS Turner, N., Mason, P.J., Brown, R., Fox, M., Povey, S., Rees, A. and
Pusey, C.D.
TITLE Molecular cloning of the human Goodpasture antigen demonstrates it
to be the alpha 3 chain of type IV collagen
JOURNAL J. Clin. Invest. 89 (2), 592-601 (1992)
MEDLINE 92147878
REFERENCE
AUTHORS Quinones, S., Bernal, D., Garcia-Sogo, M., Elena, S.F. and Saus, J.
TITLE Exon/intron structure of the human alpha 3(IV) gene encompassing
the Goodpasture antigen (alpha 3(IV)NC1). Identification of a
potentially antigenic region at the triple helix/NC1 domain
junction
JOURNAL J. Biol. Chem. 267 (28), 19780-19784 (1992)
MEDLINE 93015826
REMARK Erratum: [[published erratum appears in J Biol Chem 1994 Jun
24;269(25):17358]]
REFERENCE
AUTHORS Bernal, D., Quinones, S. and Saus, J.

TITLE The human mRNA encoding the Goodpasture antigen is alternatively spliced
 JOURNAL J. Biol. Chem. 268 (16), 12090-12094 (1993)
 MEDLINE 93280184
 REFERENCE 5 (residues 1 to 1670)
 AUTHORS Quinones,S., Bernal,D., Garcia-Sogo,M., Elena,S.F. and Saus,J.
 TITLE Exon/intron structure of the human alpha 3(IV) gene encompassing the Goodpasture antigen (alpha 3(IV)NC1). Identification of a potentially antigenic region at the triple helix/NC1 domain junction
 JOURNAL J. Biol. Chem. 269 (25), 17358 (1994)
 MEDLINE 94274734
 REMARK annotation; erratum; correction to intronic sequence in A44043
 REFERENCE 6 (residues 1 to 1670)
 AUTHORS Mariyama,M., Leinonen,A., Mochizuki,T., Tryggvason,K. and Reeders,S.T.
 TITLE Complete primary structure of the human alpha 3(IV) collagen chain Coexpression of the alpha 3(IV) and alpha 4(IV) collagen chains in human tissues
 JOURNAL J. Biol. Chem. 269 (37), 23013-23017 (1994)
 MEDLINE 94364994
 COMMENT Prolines and lysines at the third position of the tripeptide repeating unit (G-X-Y) are hydroxylated to varying extents. Prolines are predominately 4-hydroxylated. Lysines are 5-hydroxylated and subsequently O-glycosylated.
 In Goodpasture's syndrome, an autoimmune response develops against an epitope in the carboxyl-terminal nonhelical NC1 domain. This minor type IV collagen is thought to form a heterotrimer of two alpha 3(IV) chains and one alpha 4(IV) chain (see PIR:CGHUI1B). A polymeric network forms with tetrameric associations among trimers amino-terminal domains (with disulfide and desmosine cross-links), dimeric associations among trimer carboxyl-terminal domains (with disulfide bonds), and both intra-trimer and inter-trimer associations in the interrupted helical domain (with disulfide and desmosine cross-links).
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BLAST PubMed Nucleotide Protein Genome Structure PopSet Taxonomy Help
Ku autoantigen p70 subunit [human, mRNA, 2123 nt]

Views:

GenBank view

Accession: S38729

Total Bases Sequenced: 2123 bp
Completed: May 8, 1993.

CDS with gene
and mRNA

Refresh

FASTA view

ASN.1 view

Legend:

Feature table

Links:

Links:

LocusLink

Organism: Homo sapiens

Genetic Code: 1

Lineage: Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Homo.

Nucleotide sequence and genomic structure analyses of the p70 subunit of the human Ku autoantigen: evidence for a family of genes encoding Ku (p70)-related polypeptides
Griffith,A.J., Craft,J., Evans,J., Mimori,T. and Hardin,J.A.
Mol. Biol. Rep. 16 (2), 91-97 (1992)
92301477

Comments and suggestions to: info@ncbi.nlm.nih.gov



NCBI Nucleotide

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1 : S38729 . Ku autoantigen p70...[gi:250496]

PubMed, Protein, Related Sequences, LinkOut

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 ACCESSION S38729
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 Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Mammalia;
 Eutheria; Primates; Catarrhini; Hominidae; Homo.
 REFERENCE 1 (bases 1 to 2123)
 AUTHORS Griffith,A.J., Craft,J., Evans,J., Mimori,T. and Hardin,J.A.
 TITLE Nucleotide sequence and genomic structure analyses of the p70
 subunit of the human Ku autoantigen: evidence for a family of gene
 encoding Ku (p70)-related polypeptides
 JOURNAL Mol. Biol. Rep. 16 (2), 91-97 (1992)
 MEDLINE 92301477
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 entry [NCBI gibbsq 107205] from the original journal article.
 This sequence comes from Fig. 3.
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11

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BLAST PubMed Nucleotide Protein Genome Structure PopSet Taxonomy Help

H.sapiens mRNA for put. B7,3 molecule of CD80-CD60 protein family

Views:

GenBank view

Accession: Y07827

Total Bases Sequenced: 1182 bp
Completed: Jan 8, 1997.

CDS with gene
and mRNA



ASN.1 view

Other features

Coding Regions

1182 put. B7.3 molecule

Feature table

Legend:

— CDS

Organism: *Homo sapiens*

Organism: Homo
Genetic Code: 1

Lineage: Eukaryota; Metazoa; Chordata; Vertebrata; Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Homo.

Cloning, structural analysis and mapping of B30 and B7 family members, to the MHC and other chromosomal regions. Toward the identification of the ancestral major histocompatibility complex
Henry,J., Ribouchon,M.T., Depetris,D., Mattei,M.G., Offer,C., Tazi-Ahnini,R. and Pantarotti,P.
Unpublished

Direct Submission

Dir. Sabi

Submitted (06-SEP-1996) P. Pontarotti, Unite 119 INSERM, 27 bd.Lei Roure, 13009 Marseille, FRANCE

Comments and suggestions to: [info@ncbi.nlm.nih.gov]

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BLAST PubMed Nucleotide Protein Genome Structure PopSet Taxonomy Help
B.verrucosa mRNA for pollen allergen Bet v 4

Views:

GenBank view

Accession: [Y12560](#)
Total Bases Sequenced: 496 bp
Completed: Apr 24, 1997.

CDS with gene
and mRNA
gene, tRNA,
promoter...

[Refresh](#)

FASTA view

ASN.1 view



Coding Regions

Legend:

— CDS — gene
— 100-200-...

Feature table

Organism: [Betula pendula](#)

Genetic Code: [1](#)

Lineage: Eukaryota; Viridiplantae; Streptophyta; Embryophyta; Tracheophyta; euphyllophytes; Spermatophyta; Magnoliophyta; eudicots; Rosidae; Fagales; Betulaceae; Betula.

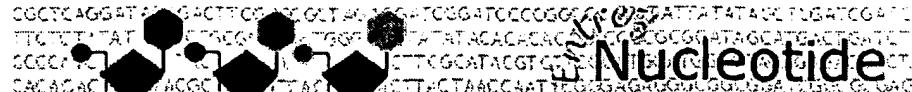
Molecular characterization, expression in *Escherichia coli*, and epitope analysis of a two EF-hand calcium-binding birch pollen allergen, Bet v 4
Twardosz,A., Hayek,B., Seiberler,S., Vangelista,L., Elfman,L., Gronlund,H., Kraft,D. and Valenta,R.
Biochem. Biophys. Res. Commun. 239 (1), 197-204 (1997)
[98005106](#)

Direct Submission

Valenta,R.

Submitted (14-APR-1997) R. Valenta, Institute of General & Experimental Pathology, General Hospital, Waehringer Guertel 18-20, 1090 Vienna, AUSTRIA

Comments and suggestions to: [\[info@ncbi.nlm.nih.gov\]](mailto:info@ncbi.nlm.nih.gov)



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1 : Y12560 . B.verrucosa mRNA f...[gi:2051992]

PubMed, Protein

LOCUS BVBETV4PA 496 bp mRNA **PLN** 24-OCT-1997
DEFINITION B.verrucosa mRNA for pollen allergen Bet v 4.
ACCESSION Y12560
VERSION Y12560.1 GI:2051992
KEYWORDS calcium-binding pollen allergen; EF-hand protein; pollen allergen.
SOURCE European white birch.
ORGANISM Betula pendula
Eukaryota; Viridiplantae; Streptophyta; Embryophyta; Tracheophyta; euphyllophytes; Spermatophyta; Magnoliophyta; eudicotyledons; Rosidae; Fagales; Betulaceae; Betula.
REFERENCE 1 (bases 1 to 496)
AUTHORS Twardosz,A., Hayek,B., Seiberler,S., Vangelista,L., Elfman,L., Gronlund,H., Kraft,D. and Valenta,R.
TITLE Molecular characterization, expression in *Escherichia coli*, and epitope analysis of a two EF-hand calcium-binding birch pollen allergen, Bet v 4
JOURNAL Biochem. Biophys. Res. Commun. 239 (1), 197-204 (1997)
MEDLINE 98005106
REFERENCE 2 (bases 1 to 496)
AUTHORS Valenta,R.
TITLE Direct Submission
JOURNAL Submitted (14-APR-1997) R. Valenta, Institute of General & Experimental Pathology, General Hospital, Waehringer Guertel 18-20 1090 Vienna, AUSTRIA
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